



AOLS CADASTRAL Core Competencies

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What is the purpose of this document on Core Competencies?

Who will use it?

The Association of Ontario Land Surveyors (AOLS)

- Academic Experience Requirements Committee (AERC):
 - Members, Monitors, Examiners, Subject Matter Experts
- Articling students and Articling surveyors
- AOLS Registrar and other AOLS staff
- Continuing Professional Development (CPD) Committee
- General membership of the AOLS

Others

- The general public
- Potential surveyors
- Professional surveyors trained elsewhere considering licensure in Ontario
- Employers
- Educational institutions and the Canadian Board of Examiners Professional Surveyors (CBEPS)
- Government

What will they use it for?

All, including the public, may use it to understand the expectations of core competencies for a professional land surveyor in Ontario. The AERC will use it to create appropriate assessments of candidates for entrance to the profession. The articling surveyor and student will use it to develop and execute a plan for the student to obtain the core competencies for entrance to the profession through experience and study. The CPD Committee and the AOLS membership may use it in the pursuit of continuing professional development. Educational institutions and CBEPS may use it to align academic courses and certifications with the core competencies for an Ontario Land Surveyor (OLS). The government may use it to assist in assessing self-regulation of the profession.

What are the Core Competencies?

These core competencies must be achieved for entrance into the profession, and maintained throughout licensure. They state outcomes and enabling competencies in terms of what a professional land surveyor will be able to do. They are not a checklist. A professional land surveyor must understand the importance of ethics and professionalism in applying, interpreting, and executing one's professional practice in order to be deserving of public trust and confidence. The core competencies set out in this document must be practiced by a professional land surveyor who is embracing ethics and professionalism as a personal quality infusing all areas of competency and practice. Ethics and professionalism are foundational to the Association and its practitioners being able to deserve and maintain public trust.

This document is a summary of core competencies for a professional land surveyor. It is not intended to detail all competencies or infer that every competency is fully articulated. An example of this is the requirement for knowledge of an extensive list of Statutes and Regulations, not herein itemized. Another example of the limited scope of this document, is the notion that a professional land surveyor will be expected to follow all of the laws of Ontario and Canada, not just the laws that are set out in this statement of Core Competencies.

The academic requirements for entrance to the profession are not being replaced by this document, they continue as set out by the Academic and Experience Requirements Committee (AERC).

The Core Competencies will require regular review and updating; these types of documents are generally reviewed every 5-10 years. In the interim they do not preclude or erase the requirement as set out in the AOLS Code of Ethics for following a program of continuing education and maintaining a level of proficiency that will meet the needs of the public. (O.Reg. 1026, Section 33(2)(c))

Reference material, assignments, links to material and legislation have not been included in this document even though they form an important component of gaining experience and knowledge in each of the Core Competencies. They will be housed by the AOLS in a separate document or online so that they can be readily updated and maintained.

If you have questions about this document, please direct them to the AOLS Registrar:

Registrar

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Professionalism: Ethics

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate an understanding that protection of the public interest is the overarching purpose for acting ethically in the exercise of their profession.</p> <p>B. Demonstrate a commitment to the public by applying best practices and adhering to ethical conduct.</p> <p>C. Demonstrate an understanding of the duty of the surveyor to provide impartial boundary opinions supported by the assessment of evidence and principles established by law.</p> <p>D. Demonstrate an understanding of professional self-regulation.</p>	<ol style="list-style-type: none"> 1. Fulfill and adhere to: <ol style="list-style-type: none"> a) the AOLS Code of Ethics, b) the AOLS Standards of Practice, and c) the Statutes and Regulations governing the practice of surveying. 2. Undertake work within one's personal scope of professional practice (i.e., possess the knowledge, competence, and resources relevant to the specific job). 3. Demonstrate an understanding of the professional scope and geographic jurisdiction that the AOLS licence permits (e.g., distinguish between provincial and Canada lands). 4. Identify and manage conflicts of interest. 5. Demonstrate an understanding of the obligations for communicating with, or responding to, the AOLS in a timely manner. 6. Demonstrate a commitment to participate in the self-regulating professional activities of the AOLS. 7. Demonstrate an understanding of rights and responsibilities outlined in the <i>Ontario Human Rights Code</i>.

Professionalism: Communication

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Communicate effectively, in written and verbal form.</p> <p>B. Clearly articulate the work processes and analysis for boundary retracement and other land surveying projects.</p>	<ol style="list-style-type: none"> 1. Write professional reports, submissions, and letters. 2. Articulate the assessment of evidence and legal principles used to determine the location of a boundary. 3. Demonstrate an understanding of the documentation required to support the preparation of professional reports. 4. Demonstrate an understanding of timely, effective, and appropriate communication with clients, other surveyors, other professionals, prospective clients, the public, and government. 5. Demonstrate an understanding of effective communication skills for working with co-workers, staff, peers, and on teams. 6. Advise clients on appropriate surveying services for their situation. 7. Demonstrate an understanding of the Ontario legal system and the role of the surveyor as an expert witness.

Professionalism: Business Practices

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate knowledge of the basics of business practices.</p>	<p>Demonstrate knowledge in</p> <ol style="list-style-type: none">1. Business Finance2. Business and Professional Liability and Insurance3. Project Management4. Client Contracts5. General Office Organization and Procedures6. Business Law and Standards7. Human Resources8. Health and Safety

Cadastral Boundaries: Research

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Carry out the documentary and field research required to assess the evidence for boundary retracement.</p> <p>B. Report on the research and analysis of evidence undertaken for a boundary retracement.</p>	<ol style="list-style-type: none"> 1. Conduct research in the Ontario land registration system with an ability to understand and analyse these records. 2. Identify, obtain, interpret, and analyse historical survey records from surveyors and other sources. 3. Carry out research in the field, including: <ol style="list-style-type: none"> a) recognizing and assessing evidence of original monumentation, the first establishment of a boundary, and subsequent retracements, and b) obtaining oral and written evidence from owners and others. 4. Demonstrate knowledge of sources for documentary research including Ontario and Canada Lands survey records, and national, provincial, municipal, and other archives. 5. Demonstrate an understanding of the use of a formal affidavit to document evidence.

Cadastral Boundaries: General Boundary Retracement

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate knowledge of, apply, and report on the methodologies, legal principles and case law required to complete boundary retracements.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of, and apply, the principles of boundary retracement, statute and case law, including but not limited to: <ol style="list-style-type: none"> a. hierarchy of evidence, b. priority of registration, c. appropriate use of proportioning, d. intention of the original parties to boundary creation, e. intrinsic and extrinsic evidence, f. possessory interests, and g. evidence of boundary creation. 2. Report on the analysis of evidence based on the principles of boundary retracement, statute and case law. 3. Demonstrate knowledge of the use and effect of different types of surveys, including written reports, plans, sketches, and digital information. 4. Demonstrate knowledge about the resolution of boundary problems and conflicting surveys including the surveyor's role in <ol style="list-style-type: none"> a. reporting on issues arising from boundary retracement, b. proceedings under <i>The Boundaries Act</i>, and c. Judicial determinations.

Cadastral Boundaries: Descriptions

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Interpret the various forms of legal descriptions in terms of what evidence can be used to complete boundary surveys.</p> <p>B. Report and advise on descriptions based on an understanding of statute and case law, and land registration records.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the nature and role of descriptions in boundary retracement including but not limited to: <ol style="list-style-type: none"> a) types of legal descriptions, and b) interpretation of descriptions. 2. Apply principles of statute and case law regarding descriptions, including but not limited to: <ol style="list-style-type: none"> a) conventional lines, b) misdescriptions, and c) <i>O. Reg. 43/96 Surveys, Plans and Descriptions of Land.</i> 3. Prepare a description in accordance with statutes & regulations. 4. Demonstrate an understanding of latent and patent ambiguity in descriptions together with an ability to report and advise on potential solutions.

Cadastral Boundaries: Easements

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate an understanding of easements.</p> <p>B. Report on easements based on an understanding of statute and case law, and land registration records.</p>	<ol style="list-style-type: none">1. Demonstrate knowledge of:<ol style="list-style-type: none">a) what constitutes a validly created easement,b) prescriptive easements,c) easements in gross, andd) statute and case law related to easements. 2. Identify and report on registered and unregistered easement interests.

Cadastral Boundaries: Roads

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate an understanding of roads, including</p> <ul style="list-style-type: none"> a) where roads originate, b) the extent of roads, c) the difference between road ownership and jurisdiction, and d) how road interests are transferred. <p>B. Report on roads based on an understanding of statute and case law, and land registration records.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of statute and case law regarding roads including: <ul style="list-style-type: none"> a) road dedication and acceptance, b) legislation and municipal bylaws, c) Original Township Road Allowances and Shore Road Allowances, d) road access issues, e) travelled roads, forced roads, and colonization roads, f) Quarter Session roads, and g) the Ministry of Transportation Ontario (MTO) Plan Types and their effect and the Highways Register (<i>Land Titles Act</i> Section 72(2)). 2. Retrace the boundaries of a road and report on any complexities of extent, jurisdiction, or registered ownership of the road.

Cadastral Boundaries: Water Boundaries

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Apply and report on the legal principles set out in statute and case law in the process of arriving at an opinion on the location of a water boundary.</p>	<ol style="list-style-type: none"> 1. Survey and report on the methods used to locate water boundaries in accordance with legislation and best practice. 2. Demonstrate an understanding of the principles of water boundaries in statute and case law, including but not limited to: <ol style="list-style-type: none"> a) riparian interests and ambulatory water boundaries, b) flooded lands including methods of retracing the limit prior to flooding, and c) ad medium filum. 3. Demonstrate an understanding of accretion and erosion including recognizing the signs of accretion or erosion as opposed to flooding or reliction and determining distribution of accreted lands. 4. Demonstrate an understanding of federal and provincial legislation regarding rights of navigation and ownership of the bed of a water body. 5. Demonstrate an understanding of case and statute law and the surveyor's role in the determination of navigability. 6. Demonstrate an understanding of the research for, and how to interpret, the intent of a subdivider of a plan of subdivision adjacent to a body of water.

Cadastral Boundaries: Original Township Retracement

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate knowledge of the statutory methods of retracing original township surveys as set out in the <i>Surveys Act</i>.</p>	<ol style="list-style-type: none"> 1. Demonstrate knowledge of: <ol style="list-style-type: none"> a) Original Township Systems, b) Original Township boundary retracement and <i>Methods of Survey</i> as identified in the <i>Surveys Act</i> including the statutory methods of re-establishing lost lot corners, concession corners or township corners in original township surveys, and c) Setting an aliquot part boundary. 2. Demonstrate an understanding of the difference between the first running of a township, lot, or concession boundary and a retracement. 3. Research and interpret historical records related to the Original Township being surveyed including: <ol style="list-style-type: none"> a) instructions from the Crown, b) field notes, c) survey reports and diaries, d) the original Plan of Survey, annulments, re-surveys, and e) retracement surveys.

Cadastral Boundaries: Possessory Interests and Adverse Possession

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Differentiate adverse possession from possessory evidence used to re-establish boundaries.</p> <p>B. Report on possessory interests and/or adverse possession including a description of issues and potential solutions.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the principles of statute and case law regarding possessory interests as evidence for boundary retracement and the principles of statute and case law for adverse possession. 2. Distinguish the surveyor's scope of expertise from that of lawyers with regard to adverse possession. 3. Describe when a parcel of land may be subject to claims of adverse possession under the <i>Land Titles Act</i>. 4. Describe the process of perfecting a claim of adverse possession under the <i>Land Titles Act</i>.

Spatial Reference

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate knowledge of the requirements and best practices for measuring, georeferencing, datums, and projections.</p> <p>B. Document and report on spatial reference observations.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of Geodetic Coordinate Systems and Vertical Datums used in Ontario. 2. Demonstrate an understanding of the concepts of Ellipsoidal Heights, Orthometric Heights, Geoid Models, and their relationships. 3. Demonstrate an understanding of the benefits and limitations of different measuring techniques/equipment used to determine three dimensional coordinates. 4. Demonstrate an understanding of coordinate transformation from one Geodetic Coordinate System to another and the limitations of the transformation processes. 5. Demonstrate an understanding of the integration requirements for registered and deposited plans as required by Ontario regulation. 6. Demonstrate an understanding of survey observations, error propagation, analysis, adjustment, accuracy, and blunders.

Land and Resource Development

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Demonstrate knowledge of the roles and responsibilities of the surveyor in the development of land and resources under Ontario law.</p> <p>B. Maintain up-to-date knowledge of land and resource development laws.</p> <p>C. Work on interdisciplinary project teams demonstrating an understanding of the roles of other professionals, the owner, and developer.</p>	<ol style="list-style-type: none"> 1. Demonstrate knowledge of condominiums under the <i>Condominium Act</i> including: <ol style="list-style-type: none"> a) the types of condominiums and the process of obtaining approval and registration for each type, b) the role of the surveyor in preparing plans and descriptions for a condominium, and c) the role of the surveyor in working with other professionals and the developer in the development of a condominium. 2. Demonstrate knowledge of the division of land and interests in land under the <i>Planning Act</i> including: <ol style="list-style-type: none"> a) the role of land use planning, the intent of the <i>Planning Act</i> and other policy statements, plans, and zoning by-laws, b) the surveyor's role in the application and approval of a Plan of Subdivision, c) the processes for registration of a Plan of Subdivision, d) the process of application and approval for the division of land under Consent, e) the use of a Reference plan for the description of easements and land division, and f) the use of a Strata Plan to describe three dimensional interests. 3. Demonstrate a general understanding of the <i>Mining Act</i>.

Statutes and Regulations

Outcome: A surveyor will be able to	Enabling competencies: A surveyor will be able to
<p>A. Apply all relevant statutes and regulations to the practice of land surveying.</p>	<ol style="list-style-type: none"> 1. Demonstrate an understanding of all provincial and federal statutes and regulations relevant to the practice of professional land surveying including statutes and regulations set out by the AOLS in five categories: <ol style="list-style-type: none"> a) Primary – those that directly set surveying requirements b) Secondary – those that impact surveying requirements c) Tertiary – those that have peripheral impact on surveying d) Federal – Statutes from Canada e) Repealed Statutes – statutes that no longer exist but would have impacted historical surveying decision

Glossary

Association of Ontario Land Surveyors (AOLS): A self-regulating profession under the *Surveyors Act, R.S.O., c S29*. <https://www.ontario.ca/laws/statute/90s29#BK0>

Academic and Experience Requirements Committee (AERC): A committee of the AOLS under Section 13 of R.R.O.1990 Regulation 1026, General. <https://www.ontario.ca/laws/regulation/901026#BK1>

Boundary*: means a natural or artificial line on the surface of the earth, below the surface of the earth, in airspace or in or on any structure, the purpose of which is to indicate the extent of a legal interest in land, land under water, water, airspace or natural resources, or in a structure.

Cadastral: “*practice of cadastral surveying*” means advising on, reporting on, conducting or supervising the conducting of surveys to establish, locate, define or describe lines, boundaries or corners of parcels of land or land covered with water; from Section 1, Definitions, *the Surveyors Act, R.S.O., c S29*. <https://www.ontario.ca/laws/statute/90s29#BK0>

Cadastral Surveying means*:

- the measurement of land, land under water, or airspace to determine, locate, define, describe, establish or re-establish boundaries
- the preparation of maps, plans and documents in any format with respect to determining or establishing boundaries
- referencing any monument that defines a boundary, either directly or indirectly, to a network of geodetic points of any order of precision and determining coordinate values for the monument when those values are used in the development or maintenance of an information system that will be used in whole or in part for determining or establishing boundaries
- advising on, reporting on or supervising any of the activities listed in 1 to 3.

Continuing Professional Development (CPD): a program of continuing education for maintaining a level of proficiency that will meet the needs of the public. (R.R.O.1990 Regulation 1026, General, Section 33(2)(c)) <https://www.ontario.ca/laws/regulation/901026#BK1>

Miller’s Triangle: Miller, G. E. (1990). "The assessment of clinical skills/competence/performance." *Academic Medicine* **65**(9): S63-S67.

Personal scope of professional practice: an individual’s scope of practice is made up of the activities they carry out within their professional life. An individual’s personal scope of professional practice is generally a subset of the profession’s full scope of practice.

Professional Surveying*: means determining the location of any natural or artificial feature on land or in airspace relative to a boundary for the purpose of certifying the location of the natural or artificial feature and includes establishing control points for the purpose of Cadastral Surveying.

*As approved by Council of the AOLS on 2023 Feb 28th.